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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,310	07/02/2003	Louis Robert Litwin	PU030156	4093

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EXAMINER	
EJAZ, NAHEED	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,310	LITWIN ET AL.	
	Examiner	Art Unit	
	Naheed Ejaz	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: title has some letters missing. Replace 'Meth d and Apparatus for Frequency-Robust Detecti n Of A Wideband Code Divisi n Multiple Acc ss Sec ndary Synchr nizati n Channel' by 'Method and Apparatus for Frequency-Robust Detection Of A Wideband Code Division Multiple Access Secondary Synchronization Channel'. Appropriate correction is required.

2. Delete title from Abstract.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-7, 10, 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6,266,365), hereinafter referred to as Wang, and in view of Lewis (US 2003/0231705).

5. Refer to claim 1, Wang discloses, two set of correlators (figure 2, elements 10-14 & 16-20, col.4, lines 43-46) the first set is considered to be equivalent to the claimed first and second correlators and the second set is the claimed third and fourth correlators. He also teaches that both sets of correlators has six outputs, I and Q for each M, E & L (see col.4, lines 44-53) which is considered to be equivalent to

applicant's limitations of producing first and second real and imaginary correlated signals. Furthermore, it should be noted that Wang discloses that each set of correlator for calculating the correlation of the received signal having associated delay spread (claimed 1st and 2nd characteristics) (see col.5, lines 14-26). Wang discloses, 'logic (see figure 2, element 22) that combines a signal that corresponds to the first real correlated signal, a signal that corresponds to the first imaginary correlated signal, the second real correlated signal and the second imaginary correlated signal to produce a real part of a frequency adjusted signal and an imaginary part of the frequency adjusted signal (col.5, lines 27-44).

Although Wang teaches two sets of correlators that calculates the correlation of the received signals based having associated delay spread (col.5, lines 14-26) (as described above paragraph # 3 of this Office Action) but he does not disclose first and second characteristics explicitly.

Lewis teaches Golay correlators for correlating Primary and Secondary code words (claimed 1st and 2nd characteristics) based upon their sequences (page # 2, paragraph # 0015, lines 15-35 & page # 4, paragraph # 0024).

It would have been obvious to one ordinary skill in the art to implement the Primary and Secondary SCH channel characteristics or code words of Lewis into Wang's correlation circuit (figure 1 & 2) in order to differentiate between primary and secondary SCH channels delay associated with received signal and hence reduce the amount of data shifting through delay structures of the filter or Golay correlator and in

turn enables a reduction in power consumption as taught by Lewis (page # 4, paragraph # 0028).

6. Refer to claim 4, Wang teaches all the limitations in the previous claims on which claim 4 depends but he does not disclose primary and secondary synchronization code correlators.

Lewis discloses, 'primary synchronization code ("PSC") correlators' and 'secondary synchronization code ("SSC") b correlators' (see page # 4, col.1, paragraph # 0024).

It would have been obvious to one ordinary skill in the art to implement the Primary and Secondary SCH channel characteristics or code words of Lewis into Wang's correlation circuit (figure 1 & 2) in order to differentiate between primary and secondary SCH channels delay associated with received signal and hence reduce the amount of data shifting through delay structures of the filter or Golay correlator and in turn enables a reduction in power consumption as taught by Lewis (page # 4, paragraph # 0028).

7. Claims 5, 13, and 14 are rejected under the same rational as described in claim 4 rejection of this Office Action.

8. Regarding claims 6 and 7, Wang discloses two different sets of correlators and each set is differentiated by it's calculation of correlation of the received signal having associated delay spread (col.5, lines 14-26) but he does not use 1st and 2nd characteristics as Primary SCH and Secondary SCH channels.

Lewis teaches Golay correlators for correlating Primary and Secondary code words (claimed 1st and 2nd characteristics) based upon it's sequences (page # 2, paragraph # 0015, lines 15-35 & page # 4, paragraph # 0024).

It would have been obvious to one ordinary skill in the art to implement the Primary and Secondary SCH channel characteristics or code words of Lewis into Wang's correlation circuit (figure 1 & 2) in order to differentiate between primary and secondary SCH channels delay associated with received signal and hence reduce the amount of data shifting through delay structures of the filter or Golay correlator and in turn enables a reduction in power consumption as taught by Lewis (page # 4, paragraph # 0028).

9. Regarding claim 10, Wang discloses, 'an analog-to-digital converter that receives a CDMA signal and converts the CDMA signal into a digital signal' (see figure 2, element 6), 'a matched filter (see col.1, lines 31-37) that filters the digital signal to produce a filtered digital signal' (see figure 2, element 8, col.3, lines 62-67, col.4, lines 1-2), 'a tapped delay line that receives the digital signal to produces a delayed filtered digital signal' (see col.4, lines 3-17), 'a cell search block, comprising: a first correlator that correlates at least a portion of the delayed filtered digital signal for a real part of a first characteristic of the received signal to produce a first real correlated signal; a second correlator that correlates at least a portion of the delayed filtered digital signal for an imaginary part of the first characteristic of the received signal to produce a first imaginary correlated signal; a third correlator that correlates at least a portion of the delayed filtered digital signal for a real part of a second characteristic of the received

signal to produce a second real correlated signal; a fourth correlator that correlates at least a portion of the delayed filtered digital signal for an imaginary part of the second characteristic of the received signal to produce a second imaginary correlated signal; and logic that combines a signal that corresponds to the first real correlated signal, a signal that corresponds to the first imaginary correlated signal, the second real correlated signal and the second imaginary correlated signal to produce a real part of a frequency adjusted signal and an imaginary part of the frequency adjusted signal.' (see claim 1 rejection above).

10. Claim 15 is rejected under the same rational as mentioned in claims 1 and 10 rejections above of this Office Action.

11. Claims 16 and 17 are rejected under the same rational as mentioned in claims rejection of 6 and 7 above.

12. Regarding claim 18, Wang teaches all the limitations in the previous claims on which claim 18 depends but he fails to disclose determination of the complex conjugate.

Lewis discloses, 'determining the complex conjugate of an imaginary portion of the first correlated signal' (see figure 4, elements 430, 432, 434 & 'conj', page # 3, paragraph # 0022) (it should be noted that despread is a correlator and is considered to be equivalent to applicant's limitations of having first correlator which input the signal to the multiplier in order to calculate the conjugate).

It would have been obvious to one ordinary skill in the art to implement the teachings of Lewis into Wang in order to compensate for the channel estimation by

multiplying the conjugated signal to another received signal as taught by Lewis (see page # 3, paragraph # 0022, lines 1-6).

13. Refer to claim 19, Wang teaches all the limitations in the previous claims on which claim 19 depends but he fails to disclose multiplication of the correlates signal by a Primary Synchronization Code.

Lewis discloses, 'multiplying the first correlated signal by a Primary Synchronization Code ("PSC") sequence to produce an intermediate adjusted correlated signal' (see figure 4, element 432, col.2, page # 3, paragraph # 0022) (it is noted that despread is a correlator (page # 3, paragraph # 0020, lines 16-19) and element 'conj' (figure 4, output from elements 430) is multiplying by (figure 4, element 432) with PCCPCH code (figure 4, element 418) through (figure 4, element 424) and hence is considered to be equivalent to applicant's claim limitations).

It would have been obvious to one ordinary skill in the art to implement the teachings of Lewis into Wang in order to compensate for the channel estimation by multiplying the conjugated signal to another received signal as taught by Lewis (see page # 3, paragraph # 0022, lines 1-6).

14. Refer to claim 20, Wang teaches all the limitations in the previous claim on which claim 20 depends but he fails to disclose determining the complex conjugate.

Lewis discloses, 'determining the complex conjugate of an imaginary portion of the intermediate adjusted correlated signal to form an imaginary portion of the adjusted correlated signal' (se figure 4, elements 432, 436, page # 3, paragraph # 0022).

It would have been obvious to one ordinary skill in the art to implement the teachings of Lewis into Wang in order to compensate for the channel estimation by multiplying the conjugated signal to another received signal as taught by Lewis (see page # 3, paragraph # 0022, lines 1-6).

15. Claims 2, 3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6,266,365), hereinafter referred to as Wang, Lewis (US 2003/0231705), as applied to claim 1 above, and further in view of Molnar (US 6,298,227).

16. Regarding claim 2, Wang and Lewis teach all the limitations in the previous claims on which claim 2 depends but they fail to disclose frequency adjustment block that receives real correlated signals.

In Molnar reference correlated signals are received by frequency correction unit (see figure 3, element 300) which is equivalent to applicant's limitations in the claim since the unit is responsible to correct the frequency offset of the signals.

It would have been obvious to one ordinary skill in the art to implement the teachings of Molnar into Wang and Lewis in order to correct frequency offset for frequency errors as taught by Molnar (see col.1, lines 47-65 & col.2, lines 35-48).

17. Refer to claim 3, Wang and Lewis teach all the limitations in the previous claims on which claim 3 depends but they fail to disclose frequency adjustment block. It should be noted that Lewis teaches primary synchronization code correlators (see page # 4, col.1, paragraph # 0024).

Molnar discloses frequency correction unit (see figure 3, element 300) which receives the signals from plurality of correlators (see Abstract).

It would have been obvious to one ordinary skill in the art to implement the teachings of Molnar into Wang and Lewis in order to correct frequency offset for frequency errors as taught by Molnar (see col.1, lines 47-65 & col.2, lines 35-48).

18. Claim 11 is rejected under the same rational as described in claim 2 rejection of this Office Action.

19. Claim 12 is rejected under the same rational as described in claim 3 rejection of this Office Action.

20. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6,266,365), hereinafter referred to as Wang, Lewis (US 2003/0231705), as applied to claim 1 above, and further in view of Popovic' (US 6,567,482).

21. Claim 8 is rejected under the same rational as described in claim 9 rejection of this Office Action (see below).

22. Referring to claim 9, Wang teaches all the limitations in the previous claims on which claim 9 depends but he fails to disclose UMTS.

Popovic' discloses, 'a portion of a receiver that complies with the Universal Mobile Telecommunications System ("UMTS") Wideband Code Division Multiple Access ("WCDMA") standard' (see figure 1, element 24, col.2, lines 8-25, col.8, lines 48-63).

It would have been obvious to one ordinary skill in the art to implement the teachings of the Popovic' into Wang in order to have the receiver compatible with the UMTS standard and hence ensure high quality by providing wide bandwidth for

multimedia services and other high rate demands as well as robust features as taught by Popovic' (see col.8, lines 51-63).

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Nystrom et al. (US 6,526,091) teach communication methods and apparatus based on orthogonal hadamard-based sequences having selected correlation properties.
- Fenton (5,414,729) teaches pseudorandom noise ranging receiver which compensates for multipath distortion by making use of multiple correlator time delay spacing.

Contact Information

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naheed Ejaz whose telephone number is 571-272-5947. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

25. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Naheed Ejaz
Examiner
Art Unit 2631

N.E.
1/3/2006